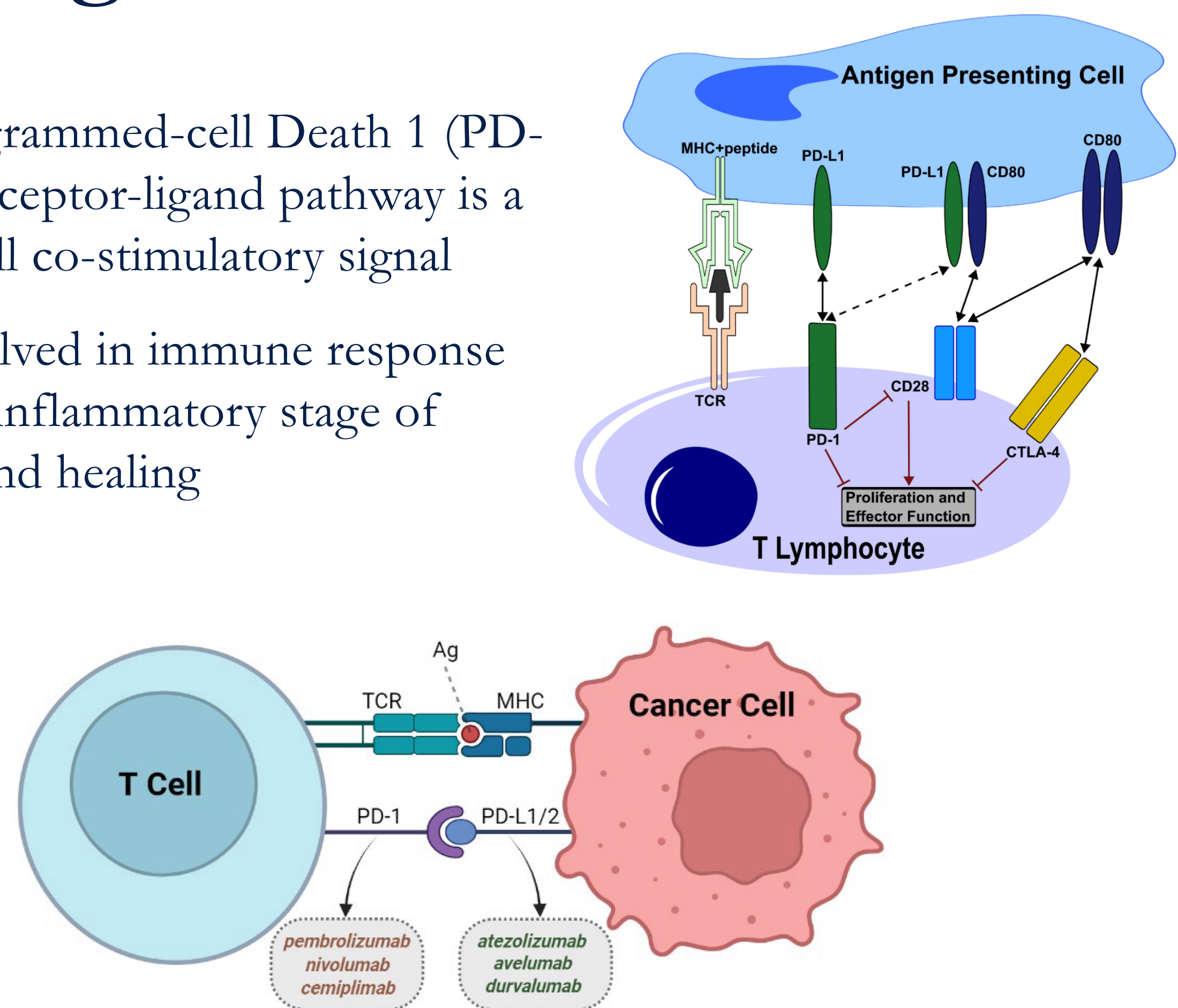


Background

- Programmed-cell Death 1 (PD-1) receptor-ligand pathway is a T-cell co-stimulatory signal
- Involved in immune response and inflammatory stage of wound healing



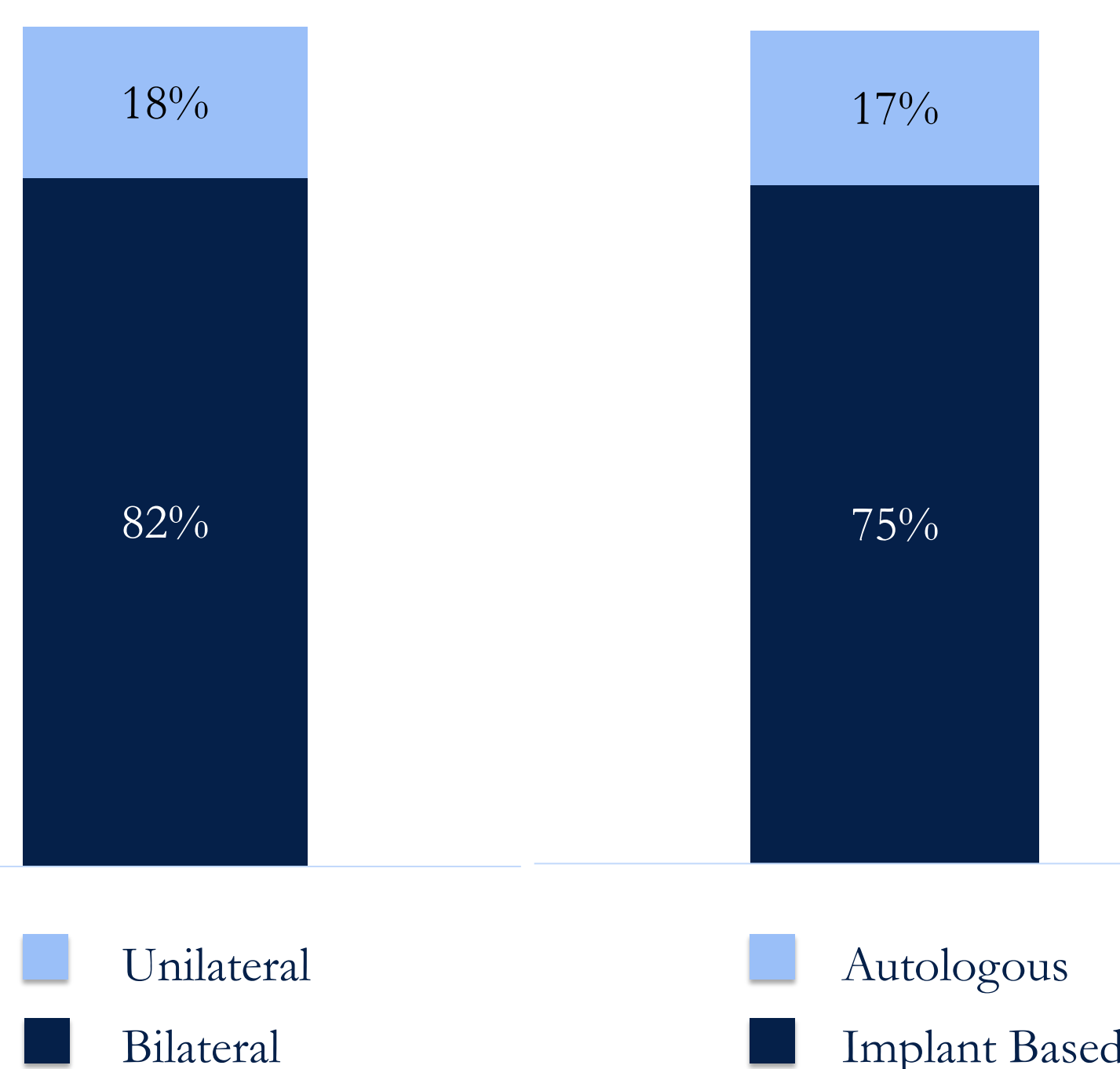
- PD1R/L inhibition is increasingly used as neoadjuvant therapy for breast cancer
- Unknown impact on surgical/reconstructive outcomes
- **Goal: Investigate reconstructive outcomes after nipple-sparing mastectomy with neoadjuvant immunomodulation, compared to other agents**

Methods

- Retrospective review Jan 2018-Jan 2022 at UCSF
- All nipple-sparing mastectomies with any reconstruction
- Demographic, chemo, clinical, post-op variables collected
- PD1-inhibitor and other neoadjuvant therapy stratified for analysis of outcomes

Results

819 total NSMs (482 women)



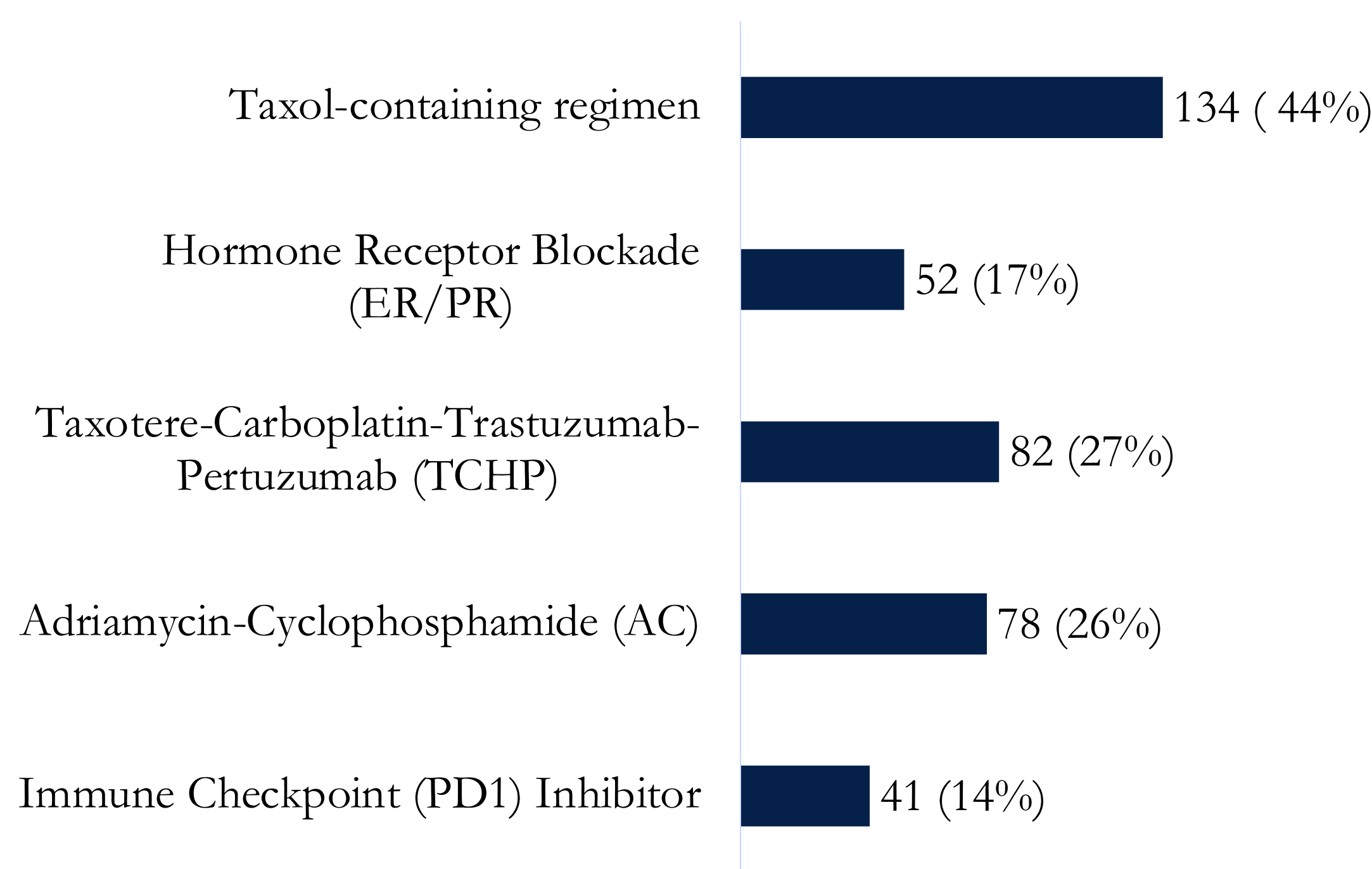
PD1 vs all NSMs

No significant differences in ($p > 0.05$)

- Mastectomy flap necrosis
- Infections
- Explant
- Seroma
- Hematoma
- TE complications

Neoadjuvant Treatment

304 (37.1%) with neoadjuvant exposure



PD1 vs Other Neoadjuvant

Outcomes	Other Neoadjuvant Therapy (n=263)	Neoadjuvant PD1 Inhibition (n=41)	p value
Any NAC necrosis	8 (3.0)	4 (9.8)	p=0.040*
Full NAC necrosis	5 (1.9)	3 (7.3)	p=0.044*
Seroma	23(8.7)	4 (9.8)	p=0.832
Mastectomy Flap Necrosis	3 (1.1)	0 (0)	p=0.492
Incisional Breakdown	8(3.0)	0 (0)	p=0.258
Hematoma	5 (1.9)	1 (2.4)	p=0.818
Infection	33 (12.5)	4 (9.8)	p=0.611
Explant	19 (7.2)	0 (0)	p=0.075

Multivariate Regression

NAC necrosis with covariates for medical comorbidities, age, BMI, incision, neoadjuvant immunotherapy

- ❖ Neoadjuvant immunotherapy not significant (OR 2.3, $p=0.210$)
- ❖ Peri-areolar incisions significantly associated with increased odds of NAC necrosis 18x (OR 18.8, $p=0.006$)

Discussion

- Despite theoretical risk for delayed wound healing, no significant associations observed with key complications
- Higher NAC necrosis seen with PD1-blockade compared to non-PD1 blockade neoadjuvant therapy → not significant in regression analysis
- Peri-areolar incisions associated with increased odds of NAC necrosis 18-fold in overall neoadjuvant cohort
- These therapies may compound effects on tissue perfusion in some way → warrant other incisional techniques

Future Directions

- Increased sample size with longer follow up
- Continued investigation of these and other targeted therapies to learn more about potential effect on reconstructive outcomes

References

- Riella LV, Paterson AM, Sharpe AH, Chandraker A. Role of the PD-1 pathway in the immune response. Am J Transplant. 2012 Oct;12(10):2575-87. doi: 10.1111/j.1600-6143.2012.04224.x. Epub 2012 Aug 17. PMID: 22900886; PMCID: PMC3784243.
- Basudan AM. The Role of Immune Checkpoint Inhibitors in Cancer Therapy. Clinics and Practice. 2023; 13(1):22-40. <https://doi.org/10.3390/clinpract13010003>
- Nunes Filho P, Albuquerque C, Pilon Capella M, Debiase M. Immune Checkpoint Inhibitors in Breast Cancer: A Narrative Review. Oncol Ther. 2023 Jun;11(2):171-183. doi: 10.1007/s40487-023-00224-9. Epub 2023 Mar 14. PMID: 36917399; PMCID: PMC10260715.
- Lorentzen T, Heidemann LN, Möller S, Bille C. Impact of neoadjuvant chemotherapy on surgical complications in breast cancer: A systematic review and meta-analysis. Oncol. 2022 Jan;48(1):44-52. doi: 10.1016/j.ejso.2021.09.007. Epub 2021 Sep 14. PMID: 34548216.